Preliminary Site Investigation

RAAF Base East Sale – Per- and Poly-fluoroalkyl Substances (PFAS) Investigations

Prepared for:
Department of Defence – Directorate of Environmental Remediation Programs
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Distribution

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Executive Summary

Senversa has been engaged to undertake an investigation of the nature and extent of per- and poly-fluoroalkyl substances (PFAS) at the Department of Defence (Defence) RAAF Base East Sale (the site) and across surrounding areas.

Senversa has prepared this Preliminary Site Investigation (PSI) to provide a baseline assessment of potential sources of PFAS at the base, pathways by which these PFAS may migrate through the environment and receptors that may come into contact with them on or off the base. These 'Source-Pathway-Receptor (SPR) linkages' form the basis of the conceptual site model (CSM).

The scope of this PSI is limited to an assessment of PFAS only, particularly relating to the storage and handling of Aqueous Film-Forming Foams (AFFF).

The site is located in an agricultural area, with farms, cattle grazing and rural residential properties surrounding the base. Shallow groundwater is heavily utilised for dairy, stockwatering and domestic (non-potable) uses. Deeper groundwater provides the primary drinking water supply for the area. It is present at depths of approximately 100 metres, beneath a thick clay aquitard and is generally not connected with shallow aquifers in the East Sale area.

The site is located in close proximity to The Heart Morass wetlands to the south, with Lake Wellington, a RAMSAR wetland, located approximately 4 kilometres to the east. These areas are of ecological significance, are utilised for recreational purposes such as duck hunting and fishing and are also used for commercial fishing (such as fishing of eels).

Information collected from previous investigations and interviews with base employees indicates that AFFFs were widely used at the site. Particularly high rates of AFFF use were associated with firefighting, firefighting training and the maintenance of firefighting equipment and vehicles. The limited environmental sampling completed to date indicates elevated concentrations of perfluorooctane sulfonate (PFOS) as present in key source areas.

The preliminary CSM indicates a number of SPR linkages as being potentially complete, with significant historical use of AFFF on-site being the source that potentially impacts a number of sensitive receptors on- and off-site. Further assessment of the nature and extent of PFAS impacts is therefore required, to assess whether receptors may be exposed to unsafe levels of PFAS within their environment. The key potentially complete SPR linkages requiring further assessment as proposed as part of the Detailed Site Investigation (DSI) are summarised in the table below.

Potentially Complete Source-Pathway-Receptor Linkages Requiring Assessment

Location	Media	Receptors	DSI Assessment Focus
On-site	Soil	Residents, workers and intrusive workers Terrestrial ecological receptors	Site-wide grid-based and targeted shallow soil
	Surface Water	Residents, workers and intrusive workers Aquatic ecological receptors	Site-wide drainage line and ponded water
	Groundwater – Shallow – Direct Contact	Workers and intrusive workers Terrestrial ecological receptors	Targeted groundwater monitoring wells

Location	Media	Receptors	DSI Assessment Focus
Off-site	Surface Water	Residents, workers and intrusive workers Recreational users of wetlands and waterways Aquatic ecological receptors Terrestrial ecological receptors	Available public bores and select private bores Waters of streams/waterways and The Heart Morass, Dowd Morass and Lake Wellington
	Groundwater – Shallow – Extraction	Residents/ farmers, workers and intrusive workers Terrestrial ecological receptors	Available public bores and select private bores
	Bioaccumulation	Residents Consumers of agricultural products (beef and/or dairy products raised on-site or off-site) Consumers of wetland fauna (primarily understood to be ducks, eels, fish) Recreational users of wetlands and waterways Terrestrial and aquatic receptors	Targeted soil, surface water and grass